

YOUR FIRST VIEWS

Until you become familiar with your telescope, it is best to pick easy targets for your first views of out celestial surroundings. The easiest and most interesting of all, is the moon.

The moon is best viewed at low power and when it is less than full. Because of its proximity to Earth, its angular speed is quite fast — 15 arc minutes per minute of time or 1/2 its diameter per minute. Magnification provided by the telescope not only makes the image larger, it also has the effect of increasing apparent speed, making tracking more difficult.

The brightness of the full moon tends to flatten some surface details and hide others. Best viewing is when it is waxing or waning.

The planets Venus, Mars, Jupiter and Saturn are all easy targets.

Venus is exceeded in brightness only by the sun and moon. It is best viewed at twilight or just before dawn. Look for Venus on the horizon. It may be seen as a disc or as a thin crescent.

Mars appears as a reddish-orange disc. Some surface details may be seen when it is closest to earth.

Jupiter, the largest of the known planets in our solar system is an interesting subject. The great red spot is easily seen, although in small telescopes it appears more blue-grey than red. Equally easy to see is the equatorial belt. It also appears blue-grey.

Four of Jupiter's moons known as the Galilean moons, are seen as tiny specs of light laying on either side of this giant planet.

Saturn, appearing dull yellow in the night sky, reveals its ring systems readily, depending on its orbital position relative to Earth, the rings may be seen as a streak of light cutting through Saturn, to a broad band surrounding suspended disc.

Uranus and Neptune are not easy targets for the beginner because they are not bright enough to be seen with the naked eye, making locating them difficult.

As your interest in astronomy increases and you gain experience, you will learn of celestial "addressing" system which makes locating unseen objects possible.

Pluto, the furthest of the known planets requires a telescope with a five or six inch diameter objective lens, just to make it barely visible.

Mercury, although a "visible" planet is not an easy telescope target for the novice. It lies so close to the sun that it can only be seen in the early morning or early evening hours low on the horizon. March, April, August and September are the best months to observe Mercury.

Among the stars, the easiest targets are the Pleiades group in the constellation, Taurus and the Great Nebula in Orion.

Turn your telescope into the seven visible stars of the Pleiades and you will see hundreds of additional stars not visible to the naked eye.

Located about midway down the "sword" of Orion is the Great Nebula. This great gas cloud is in the process of forming a new star, which will have an estimated mass 10,000 times greater than our sun.

Stars in general are not interesting to the casual observer. The magnifying power of telescopes has no apparent effect on them, no detail can be observed, no visual information is revealed. However to the experienced observer, there are hundreds of interesting stars or groups of stars which provide a lifetime of rewarding study.

An example of one such star is Betelgeuse, the light-orange star marking one shoulder of Orion. It is one of the largest known stars, with a diameter 400 times our sun. Earth's orbit could easily fit inside Betelgeuse. One of the most interesting features of this young star is that it periodically expands and contracts.

Sirius, the brightest star in the night sky is actually 27 times brighter than the sun. In itself, Sirius is of no particular interest, however because of its companion star, the Pup, a "binary" system is formed. Sirius and the Pup orbit about a common center of gravity.

About 1/10,000 as bright as Sirius, the Pup is far denser. On Earth, one cubic inch of the Pup's material would weight one ton. The estimated mass of the Pup is 250,000 time greater than the Earth.

As dense as the Pup is, it does not hold the record. The densest of the known stars is known as AC+70°8247. A tablespoon of its substance would weigh 720 tons.

On the other hand, the largest known star, Epsilon Auringne B, is 100 million times less dense than water. If it were here on earth, it would have to be tied down to keep it from floating away.

If you wish to learn more about astronomy, there are several sources of information available from libraries and bookstores. *Astronomy Made Simple* (Published by Made Simple Books) and *The Stargazer's Bible* (Doubleday) are both inexpensive paperbacks written for the novice. Two monthly periodicals, *Sky and Telescope* and *Astronomy* are available at newsstands or bookstores.

CAUTION: Viewing the sun with this telescope or even the unaided eye can result in blindness or other serious eye damage which may be permanent.

If repair service for your telescope is ever required, contact

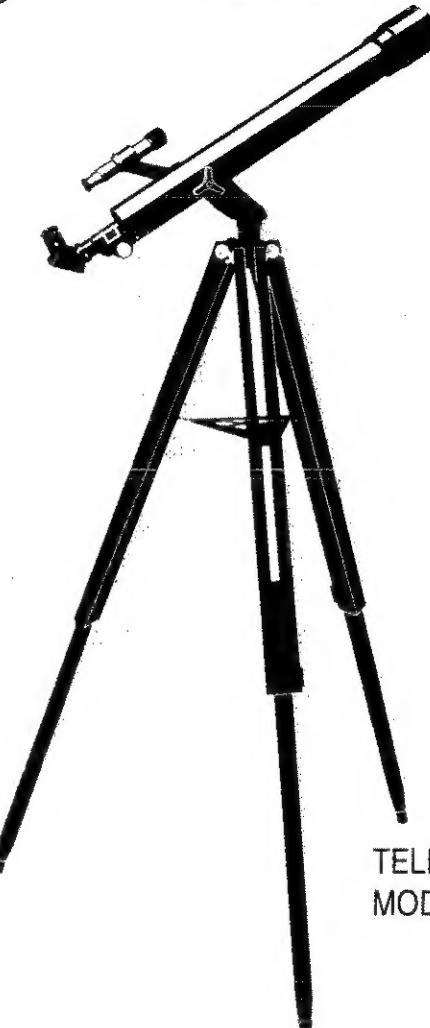
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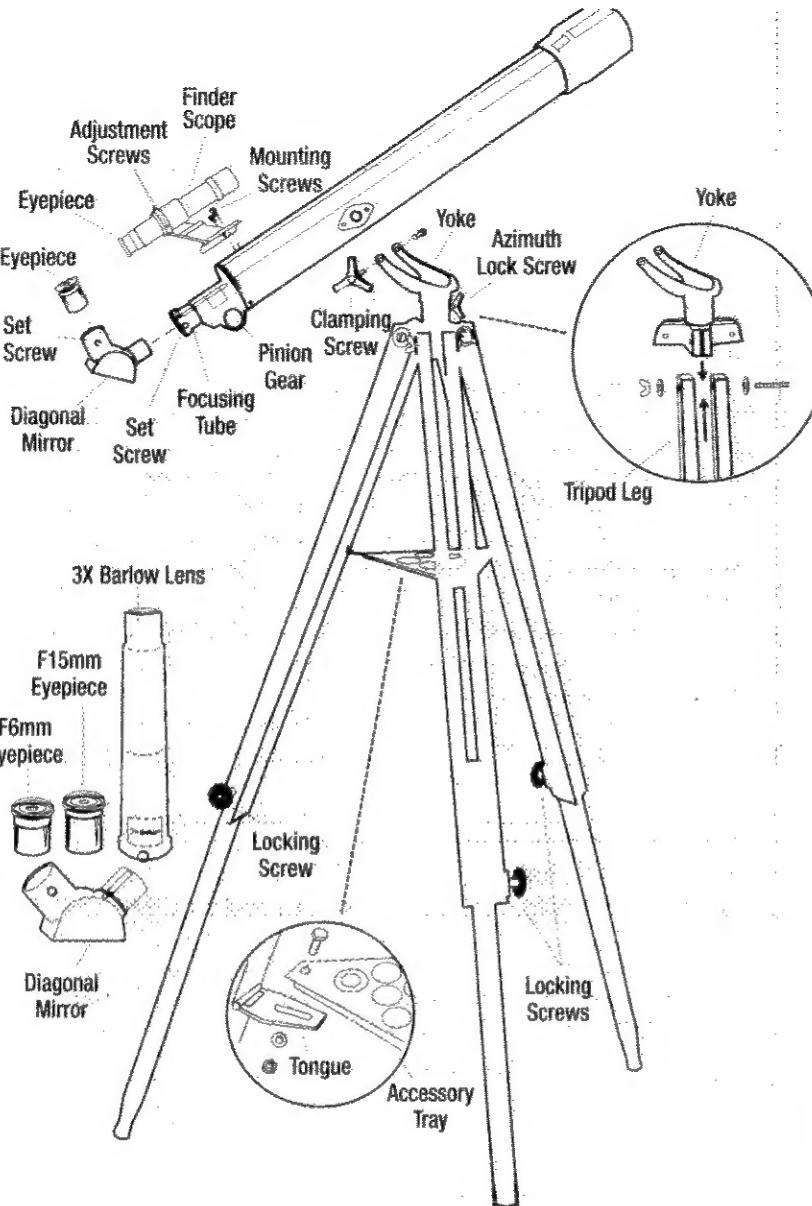
ASSEMBLY

1. Remove all parts from the boxes and identify them.
2. Extend each leg equally, thread a leg locking screw (with knob) into hole located at bottom of upper section of leg. Firmly seat (do not overtighten) locking screw.
3. Use the large bolts, nuts and washers to attach tripod legs to tripod head. Be sure accessory tray tongues face inward.
4. Use small bolts, nuts and washers to attach accessory tray to tongues.
5. Mount telescope to yoke. Do not over tighten the screws. Remove objective lens and focusing tube dust covers.
6. Remove finder scope mounting screws from telescope, position finder scope bracket on telescope and replace mounting screws.
7. Insert diagonal mirror into focusing tube and F15mm eyepiece into diagonal mirror. Secure diagonal mirror and eyepiece by tightening the set screws.

FINDER SCOPE ALIGNMENT

Assembly is now complete, but the finder scope must be aligned with the main telescope.

1. In the day time, aim the telescope at a distant object (1/4 mile or more) by sighting along the main body tube. Loosen the azimuth locking screw to turn the telescope left or right. To make up-down adjustments, grip the telescope near the pinion gear and move in the direction needed.



2. Look into the eye piece and rotate pinion gear to bring image into focus. NOTE: Objects will appear reversed (mirror image).
3. Refine aiming of telescopes as needed to center target object in the field of view. Tighten azimuth locking screw to prevent further movement.
4. Look into the finder scope (objects will appear up-side down). Focus by rotating finder eye piece. Center target object on crosshair intersection by turning the alignment screws in the finder scope bracket.
5. Replace the F15mm eyepiece with F6mm eyepiece. Repeat steps 3 and 4.

USING THE BARLOW LENS

The Barlow increases eyepiece power 3 times. To use, insert Barlow lens into the focusing tube and an eyepiece into the Barlow.

GETTING THE MOST OUT OF YOUR TELESCOPE

Take the time to become familiar with your new telescope. Learn the names of the various parts, where they are located and how they work. It is best to do this in the day time.

Notice how as magnification is increased, the image becomes darker, the field of view (area seen through the telescope) decreases and focusing becomes more critical.

When setting up for a viewing session, place the telescope in an area sheltered from the wind if possible. Best nighttime viewing will be away from city light and when the atmosphere is "steady" (good viewing conditions). With a little practice, you will learn to judge when viewing conditions are good. Look for the nights when the stars shine brightly with little or no twinkling.

Use low power to take advantage of the wider field of view and brighter images. Reserve your high powers for those nights when viewing conditions are really good and there is some detail to be seen.

If there is an astronomy club in your area, consider becoming a member. You can learn more in an hour from experienced hobbyists than in a month of unformed casual observing. The chamber of commerce, library, science museum or planetarium may have information regarding nearby clubs.

Eyepiece	Power	Power with Barlow
F15	53X	160X
F6	133X	400X